

IN THE CLAIMS

1-3. (Canceled)

4. (Currently Amended) A method of operating a CMP system, comprising:

obtaining a sensor signal from an electric drive assembly driving a pad conditioner of said CMP system;

estimating a first condition of said pad conditioner and a second condition of a polishing pad in contact with said pad conditioner on the basis of said sensor signal; and

predicting a remaining lifetime of the conditioning surface of said pad conditioner on the basis of the first estimated condition and a remaining lifetime of the polishing surface of said polishing pad on the basis of the second estimated condition.

5. (Original) The method of claim 4, wherein said sensor signal is indicative of at least one of a revolution of at least one electric motor of said drive assembly and a torque of said at least one motor.

6. (Original) The method of claim 5, wherein estimating said condition of said pad conditioner includes:

establishing reference data for at least one characteristic of said pad conditioner; and

comparing said sensor signal with said reference data.

7. (Currently Amended) The method of claim 6, wherein said at least one characteristic includes a frictional force acting between a conditioning surface of said pad conditioner and [[a]] said polishing pad during operation of said CMP system.

8. (Canceled)

9. (Original) The method of claim 4, further comprising controlling operation of said CMP system on the basis of said sensor signal.

10. (Original) The method of claim 9, wherein controlling operation of said CMP system includes readjusting at least one of a downforce, a polish time and a relative speed between a substrate and a polishing pad on the basis of said sensor signal.

11. (Original) The method of claim 9, wherein controlling operation of said CMP system includes readjusting a drive signal to said drive assembly on the basis of said sensor signal to adjust a conditioning effect.

12. (Currently Amended) A method of controlling a process sequence including a CMP process, comprising:

obtaining a signal from a conditioner drive assembly of a CMP system, said signal being indicative of at least one of a motor torque and a speed of a motor of said drive assembly;

estimating a condition of a polishing pad of said CMP system on the basis of said signal;

and

adjusting at least one process parameter in said process sequence on the basis of said

[[signal]] estimated polishing pad condition; and

~~estimating a remaining lifetime of at least one consumable component of said CMP system on the basis of said signal.~~

13. (Currently Amended) The method of claim 12, wherein said at least one process parameter includes at least one of a downforce exerted between the polishing pad and a polishing head is said CMP system, a polish time and relative speed of a pad and [[a]] the polishing head in said CMP system.

14. (Original) The method of claim 12, wherein said at least one process parameter includes a deposition specific parameter of a deposition tool arranged upstream of said CMP system.

15-21. (Canceled)

22. (New) The method of claim 5, wherein estimating said condition of said polishing pad includes:

establishing reference data for at least one characteristic of said polishing pad; and

comparing said sensor signal with said reference data.

23. (New) The method of claim 12, further comprising estimating a remaining lifetime of the polishing pad on the basis of said signal.

24. (New) The method of claim 14, further comprising:
estimating a polishing profile of said polishing pad on the basis of said signal; and
determining the deposition specific parameter to provide a deposition profile of a layer
formed using the deposition tool consistent with the estimated polishing profile.